

Conifer-dominated Forest and Woodland (xeric-mesic)

16,804,694 acres
17.9% landcover

Ecoregions: Canadian Rockies Northern Rockies
 Idaho Batholith Northwestern Great Plains
 Middle Rockies Wyoming Basin

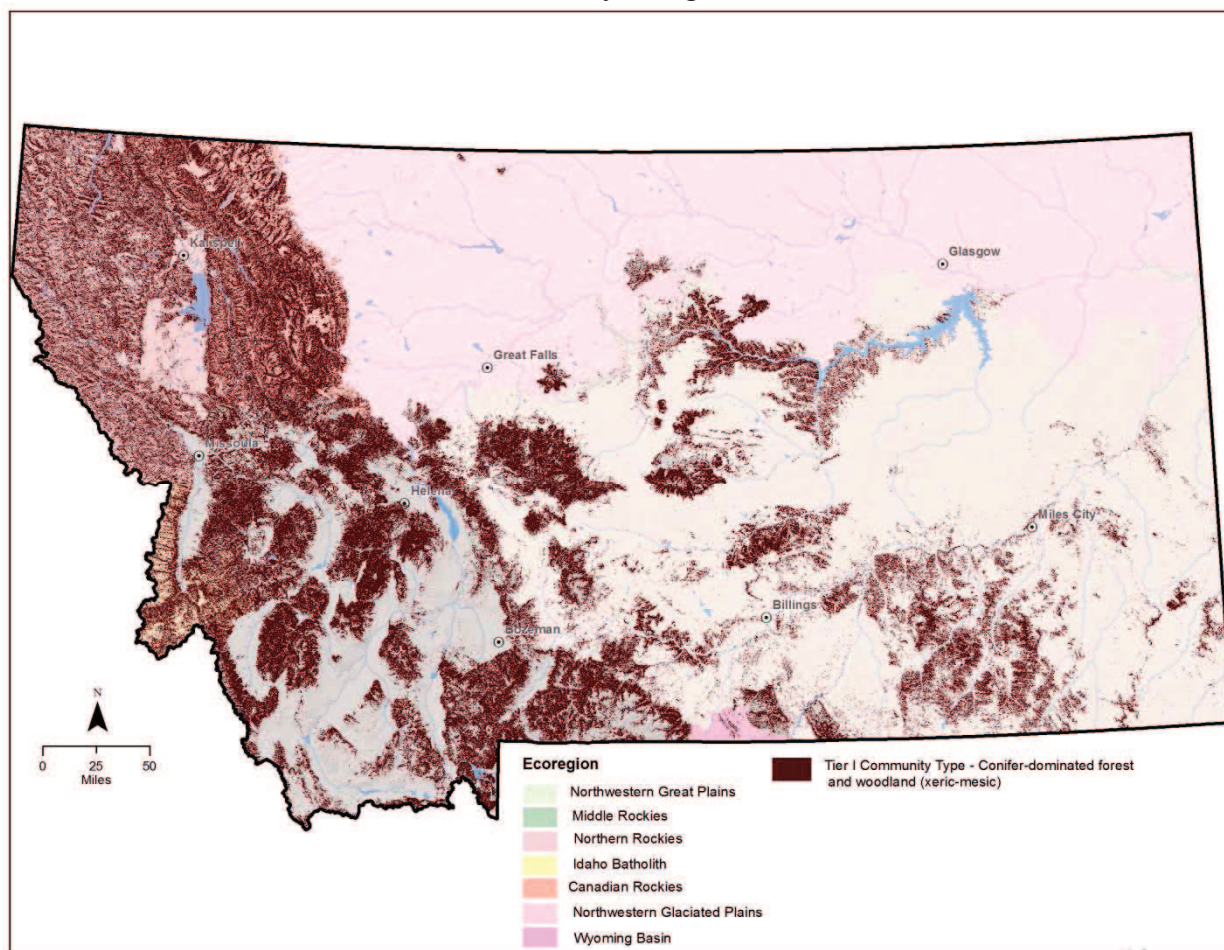


Figure 13. Distribution of Tier I Conifer-dominated Forest and Woodland (xeric-mesic)

This community type is found throughout Montana in elevations ranging from 2,900-9,500 feet. It is a dry tolerant community type that experiences long precipitation-free periods during the summer.

The dominant conifer species vary based on elevation and soil type and can be lodgepole pine (*Pinus contorta*); Engelmann spruce (*Picea engelmannii*) and subalpine fir (*Abies lasiocarpa*); whitebark pine (*Pinus albicaulis*); ponderosa pine (*Pinus ponderosa*); Douglas-fir (*Pseudotsuga menziesii*); limber pine (*Pinus flexilis*), western larch (*Larix occidentalis*), western white pine (*Pinus monticola*), and rocky mountain juniper (*Juniperus scopulorum*).

According to DNRC's forest assessment (DNRC 2010), the impacts of fire and insects are due to "an uncharacteristic increase in forest density within ponderosa pine and Douglas fir forests." In western Montana, Douglas fir has replaced ponderosa pine in 25-40% of the area, and western

white pine has been reduced by 95% due to disease introductions and the mountain pine beetle. Lack of fire or other ground disturbance has reduced western larch by 40% (DNRC 2010).

Fire and insects drive this community type more than any other factors. Prescribed fires can be used to maintain this community in the absence of natural fires.

Associated Terrestrial SGCN

Amphibians

Idaho Giant Salamander
Plains Spadefoot
Western Toad

Birds

Black-backed Woodpecker
Black-billed Cuckoo
Blue-gray Gnatcatcher
Boreal Chickadee
Brewer's Sparrow
Brown Creeper
Cassin's Finch
Clark's Nutcracker
Evening Grosbeak
Ferruginous Hawk
Flammulated Owl
Golden Eagle
Great Gray Owl
Green-tailed Towhee
Lewis's Woodpecker
Loggerhead Shrike
Northern Goshawk
Northern Hawk Owl
Peregrine Falcon
Pileated Woodpecker
Pinyon Jay
Preble's Shrew
Red-headed Woodpecker
Sharp-tailed Grouse
Varied Thrush
White-tailed Ptarmigan

Mammals

Bison
Canada Lynx
Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Pallid Bat
Pygmy Shrew
Spotted Bat
Townsend's Big-eared Bat
Wolverine

Reptiles

Greater Short-horned Lizard
Milksnake
Northern Alligator Lizard
Western Hog-nosed Snake
Western Skink

Conifer-dominated Forest and Woodland (xeric-mesic) Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	<p>Work with landowners and land management agencies to develop a sustainable grazing rotation that will allow for regeneration of aspen clones</p> <p>Manage livestock grazing in open woodland forests</p>
<p>Land use change:</p> <p>Disease and insects</p> <p>Fire regime</p>	<p>Land use change:</p> <p>Disease and insects</p> <p>Fire regime</p>	<p>Encourage restoration of natural fire regime to maintain white pine, larch, and whitebark pine</p> <p>Provide for a range of habitat age classes to sustain preferred habitats over time</p> <p>Restore or mimic natural processes using prescribed burns and other management practices, where needed</p> <p>Support efforts to learn more about disease and insect impacts and how to mitigate them</p>
<p>Forest management:</p> <p>Conflicting management policies</p> <p>ORV trespass on closed roads</p> <p>Roads</p>	<p>Forest management:</p> <p>Conflicting management policies</p> <p>Increased ORV use and subsequent illegal use</p> <p>Roads</p>	<p>Active forest management (such as thinning of understory vegetation) may be needed in some cases to manage this community type over the long-term</p> <p>Avoid water developments up-slope from aspen stands that could negatively impact surface and ground water under the aspen stand</p> <p>Conduct salvage logging in fall and winter to avoid nesting seasons for avian SGCN</p> <p>Create snags by girdling trees when needed and in areas where snags are lacking</p> <p>During salvage activities, leave patches of snags rather than single snags standing</p>

Current Impacts	Future Threats	Conservation Actions
		<p>Educate the public and land managers about the high values of snags, mature and old growth stands , large "legacy" trees, burned forest, and large woody debris to SGCN and how to better manage these habitats</p> <p>Encourage restoration of natural fire regime or implement other management actions that mimic the ecological processes provided by fire</p> <p>Incorporate a diversity of native grasses, forbs, and shrubs appropriate for this forest type when reclaiming abandoned logging roads and other disturbed areas</p> <p>Increase education and outreach to ORV community</p> <p>Increase enforcement of ORV trespass on public lands</p> <p>Leave large woody debris (such as logs >12 inches dbh and >6 feet long) during thinning and harvest operations; leave in piles to the extent consistent with Montana slash law (MCA 76-13-401), to mimic areas of natural blow-down</p> <p>Leave stringers of trees along drainages and gulches to help maintain cover for travel corridors for larger wildlife species</p> <p>Leave the largest and as many snags per acre as possible, when conducting commercial, thinning, or salvage harvest activities</p> <p>Limit or avoid spraying for spruce budworm, pine whites, and other native forest pests, except as needed around campgrounds and other special areas</p> <p>Maintain leaning snags when thinning forests</p>

Current Impacts	Future Threats	Conservation Actions
		<p>Manage aspen stands to provide a mixture of older, decadent stands and younger, rejuvenating stands</p> <p>Manage for a range of habitat age classes to sustain old growth forests over time</p> <p>Manage older high-elevation spruce-fir stands to maintain high horizontal cover</p> <p>Minimize salvage of burned and/or insect-killed timber in areas lacking structures that would need protection from fire or falling trees</p> <p>Removal of trees for mistletoe control should leave enough mistletoe "brooms" to provide nesting, roosting, and feeding areas important for some SGCN</p> <p>Snags in open areas vulnerable to wind throw can be cut off to leave a "high stump" of 10-20 feet tall, if suitable logging equipment can be deployed in the area</p> <p>When present, leave large "legacy" trees, burned or unburned, for SGCN that require large-diameter trees; trees greater than 24 inches dbh are especially valuable</p> <p>Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN</p>
Powerline corridor	Powerline permit	Continue to work with local utility companies to mark power lines to reduce lethal collisions
Roads	Roads	
	Utility corridors	Whenever possible, install powerlines underground

Current Impacts	Future Threats	Conservation Actions
		Work with utility companies and land management agencies to find the best path for new powerlines. Existing powerline corridors or along already disturbed habitat patches such as roads or railroads is ideal
Fragmentation: Highway corridors	Fragmentation: Fences inhibiting wildlife movement Highway corridors Increasing train and vehicle traffic Increasing road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Manage road density at or below current levels Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities Pollution from urban runoff and superfund sites	Mine contamination from past mining activities New hard rock mines Pollution from urban runoff and superfund sites	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health Work with landowners and land management agencies to limit impacts of hard rock mining on mature and old growth stands and negatively impact SGCN Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites Work with watershed groups to clean up nonpoint pollution that is negatively impacting SGCN

Current Impacts	Future Threats	Conservation Actions
Motorized use Recreation - very high at some FAS	Motorized use on logging roads Increased recreation Ski area expansions	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Work with land management agencies to ensure SGCN impacts are fully considered during recreational development
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Deciduous Dominated Forest and Woodland

Ecoregions: Idaho Batholith
Middle Rockies

Northwestern Glaciated Plains
Northwestern Great Plains

976,291 acres
1.0% landcover

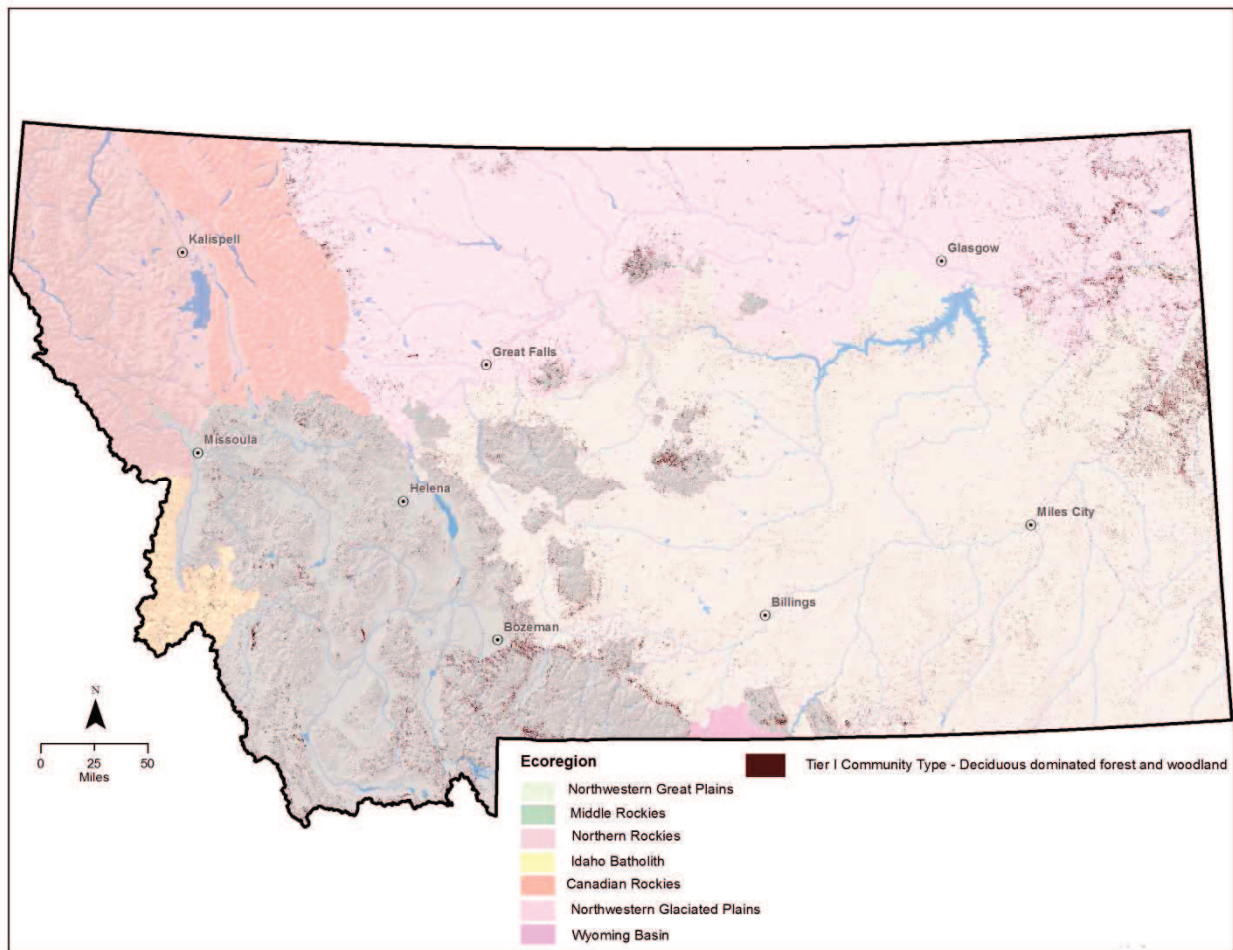


Figure 14. Distribution of Tier I Deciduous Dominated Forest and Woodland

This community type is associated with a relatively long growing season but has a cold winter with deep snow. It can be found in Montana at elevations between 3,500-9,000 feet.

The lower elevation woodlands, mostly found in the Northwestern Great Plains and Northwestern Glaciated Plains Ecoregions, are dominated by green ash (*Fraxinus pennsylvanicus*) and chokecherry (*Prunus virginiana*) and are associated with intermittent or ephemeral streams. These woody draws are very important to wildlife and domestic animals. However, this high use leads to trampling and ultimately conversion to shrubs. Alternate shade, water, and forage for cattle can help protect these draws for wildlife.

The mid and high elevation dominant species are curl-leaf mountain mahogany (*Cercocarpus ledifolius*) and quaking aspen (*Populus tremuloides*). Fire, grazing, and forestry have the greatest impact on this community type.

Associated Terrestrial SGCN

Amphibians

Plains Spadefoot
Western Toad

Birds

Alder Flycatcher
Black-billed Cuckoo
Cassin's Finch
Clark's Nutcracker
Evening Grosbeak
Ferruginous Hawk
Golden Eagle
Great Gray Owl
Green-tailed Towhee
Loggerhead Shrike
Northern Hawk Owl
Pinyon Jay
Red-headed Woodpecker
Sage Thrasher
Sharp-tailed Grouse
Spotted Bat
Veery
Yellow-billed Cuckoo

Mammals

Fisher
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Pygmy Shrew
Townsend's Big-eared Bat

Reptiles

Milksnake
Smooth Greensnake

Deciduous Dominated Forest and Woodland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	Work with landowners and land management agencies to develop a sustainable grazing rotation that will allow for regeneration of aspen, green ash, choke cherry, box elder, and development of a dense shrub and forb understory
Land use change	Land use change: Fire regime Green ash removal	Active forest management (such as thinning of understory vegetation) may be needed in some cases to manage this community type over the long-term Manage aspen stands to provide a mixture of older, decadent stands and younger, rejuvenating stands Promote aspen recruitment by building exclosures to prevent overbrowsing Remove exotic vegetation from woody draws Restore fire as a natural process in this community type, where appropriate When possible, conduct conifer removal, burning, or other habitat modifications in fall and winter, to avoid nesting seasons for avian SGCN Work with private landowners and NRCS to conserve green ash in woody draws
Forest management: Conflicting management policies Roads	Forest management: Conflicting management policies Roads	Avoid water developments upslope from aspen stands that may negatively impact hydrology under the aspen stand Conduct major harvest activities, such as road building or removal of trees, in fall and winter to avoid nesting seasons for avian SGCN

Current Impacts	Future Threats	Conservation Actions
		<p>Incorporate a diversity of native grasses, forbs, and shrubs appropriate for this forest type when reclaiming abandoned logging roads and other disturbed areas</p> <p>Investigate and address threats and impacts in forest management plans on FWP-owned lands</p> <p>Minimize salvage of burned aspen timber</p> <p>Prohibit cutting aspen for firewood</p> <p>Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN</p>
Development/subdivisions	Development/subdivisions	Work with landowners and land management agencies to limit activities (e.g., building roads in aspen stands) that may be detrimental to this community type and associated SGCN
Roads	Roads	
Fragmentation:	Fragmentation:	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible
Highway corridors	Highway corridors Increasing train and vehicle traffic	<p>Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN</p> <p>Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills</p>
Mine contamination from past mining activities	Mine contamination from past mining activities	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health
	New hard rock mines	
Recreation	Recreation	Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands

Current Impacts	Future Threats	Conservation Actions
Weeds	Weeds	<p>Use mechanical or biological control within aspen stands</p> <p>Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species</p> <p>Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes</p> <p>When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season</p> <p>Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management</p>
Climate change	Climate change	<p>Continue to evaluate current climate science models and recommended actions</p> <p>Monitor habitat changes and address climate impacts through adaptive management as necessary</p>

Deciduous Shrubland

Ecoregions: Canadian Rockies
Idaho Batholith

Northern Rockies

485,601 acres
0.5% landcover

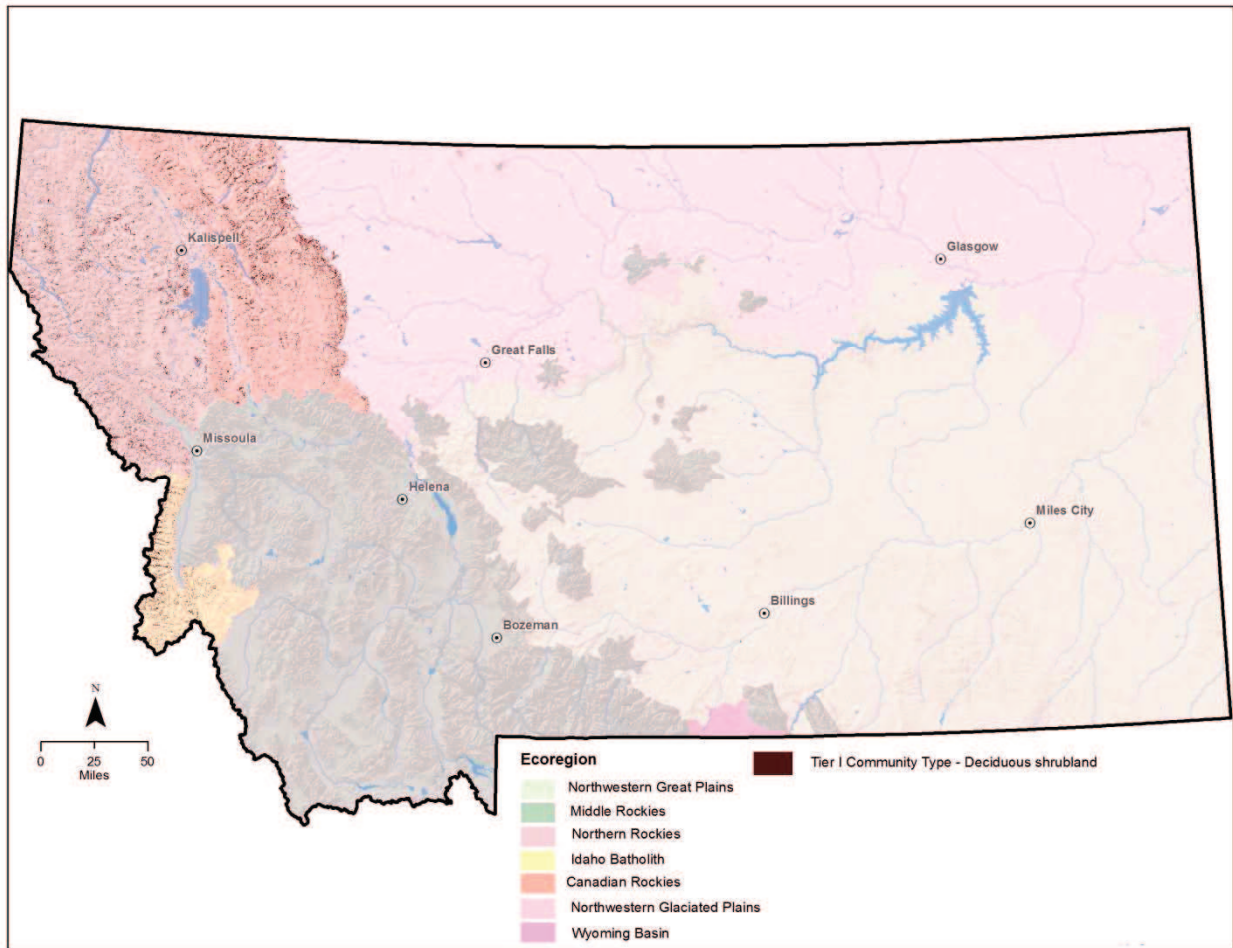


Figure 15. Distribution of Tier I Deciduous Shrubland

This community type is found throughout Montana at elevations ranging from 2,200-8,800 feet. Shrub cover is generally 30-100%. It occurs from foothills below treeline, to high alpine areas. The most common dominant shrubs include ninebark (*Physocarpus malvaceus*), bittercherry (*Prunus emarginata*), common chokecherry (*Prunus virginiana*), rose (*Rosa* spp.), smooth sumac (*Rhus glabra*), Rocky Mountain maple (*Acer glabrum*), serviceberry (*Amelanchier alnifolia*), oceanspray (*Holodiscus discolor*), rusty leaf menziesia (*Menziesia ferruginea*), black twinberry (*Lonicera involucrata*), alder buckthorn (*Rhamnus alnifolia*), prickly currant (*Ribes lacustre*), thimbleberry (*Rubus parviflorus*), sitka alder (*Alnus viridis*), cascade mountain ash (*Sorbus scopulina*), Sitka mountain ash (*Sorbus sitchensis*), and thinleaf huckleberry (*Vaccinium membranaceum*).

Fire and grazing typically drive this community type. In the absence of natural fire, prescribed burns can be used to maintain this system, though caution should be taken as some species are fire intolerant.

Associated Terrestrial SGCN

Amphibians

Western Toad

Birds

Baird's Sparrow

Clark's Nutcracker

Evening Grosbeak

Ferruginous Hawk

Golden Eagle

Gray-crowned Rosy-Finch

Green-tailed Towhee

Loggerhead Shrike

Northern Hawk Owl

Sharp-tailed Grouse

Varied Thrush

White-tailed Ptarmigan

Mammals

Bison

Canada Lynx

Dwarf Shrew

Fringed Myotis

Grizzly Bear

Hoary Bat

Merriam's Shrew

Preble's Shrew

Pygmy Shrew

Spotted Bat

Wolverine

Reptiles

Greater Short-horned Lizard

Northern Alligator Lizard

Western Skink

Deciduous Shrubland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	<p>Manage livestock grazing with sufficient rest and deferment and at appropriate stocking rates and big game use/density to allow for natural growth processes and reproduction/recruitment</p> <p>Work with landowners and land management agencies to develop a sustainable grazing rotation that will maintain Lower Montane-Foothill shrublands</p>
<p>Land use change:</p> <p>Fire regime</p>	<p>Land use change:</p> <p>Fire regime</p>	<p>Educate the public about the high values of deciduous shrubland habitats and discourage killing shrubs to increase grass production</p> <p>Encroaching conifers can be selectively removed in places where excessive encroachment threatens this community type</p> <p>Protect remnant shrubs after severe fires and where necessary to allow natural recovery of a shrub community. Use planting of appropriate species only as a last resort</p> <p>Restoration of natural processes such as fire may help maintain some fire tolerant shrub species in this community type</p> <p>Severely burned sites on very steep terrain may need to be reseeded to prevent soil erosion</p>
<p>Forest management:</p> <p>ORV trespass on closed roads</p> <p>Roads</p>	<p>Forest management:</p> <p>Increased ORV use and subsequent illegal use</p> <p>Roads</p>	<p>Decommission and reclaim old/unused roads</p> <p>Increase education and outreach to ORV community</p> <p>Increase enforcement of ORV trespass on public lands</p> <p>Investigate and address threats and impacts in forest management plans on FWP-owned lands</p>

Current Impacts	Future Threats	Conservation Actions
		<p>Manage road density at or below current levels</p> <p>Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN</p>
<p>Fragmentation:</p> <p>Highway corridors</p>	<p>Fragmentation:</p> <p>Highway corridors</p> <p>Increasing train and vehicle traffic</p> <p>Increasing road density on public lands</p> <p>Road upgrading</p>	<p>Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible</p> <p>Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use</p> <p>Manage road density at or below current levels</p> <p>Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN</p> <p>Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills</p>
<p>Mine contamination from past mining activities</p> <p>Pollution from urban runoff and superfund sites</p>	<p>Mine contamination from past mining activities</p> <p>New hard rock mines</p> <p>Pollution from urban runoff and superfund sites</p>	<p>Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health</p> <p>Work with lead agencies to ensure impacts to fish and wildlife are identified at superfund sites</p>

Current Impacts	Future Threats	Conservation Actions
Motorized use Recreation - very high at some FAS	Motorized use on logging roads Increased recreation Ski area expansions	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Work with land management agencies to ensure SGCN impacts are fully considered during recreational development on public lands
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management
Climate change	Climate change	Continue to evaluate current climate science models and recommended actions Monitor habitat changes and address climate impacts through adaptive management as necessary

Lowland/Prairie Grassland

Ecoregions: Northwestern Glaciated Plains
 Northwestern Great Plains

Wyoming Basin

19,663,104 acres
20.9% landcover

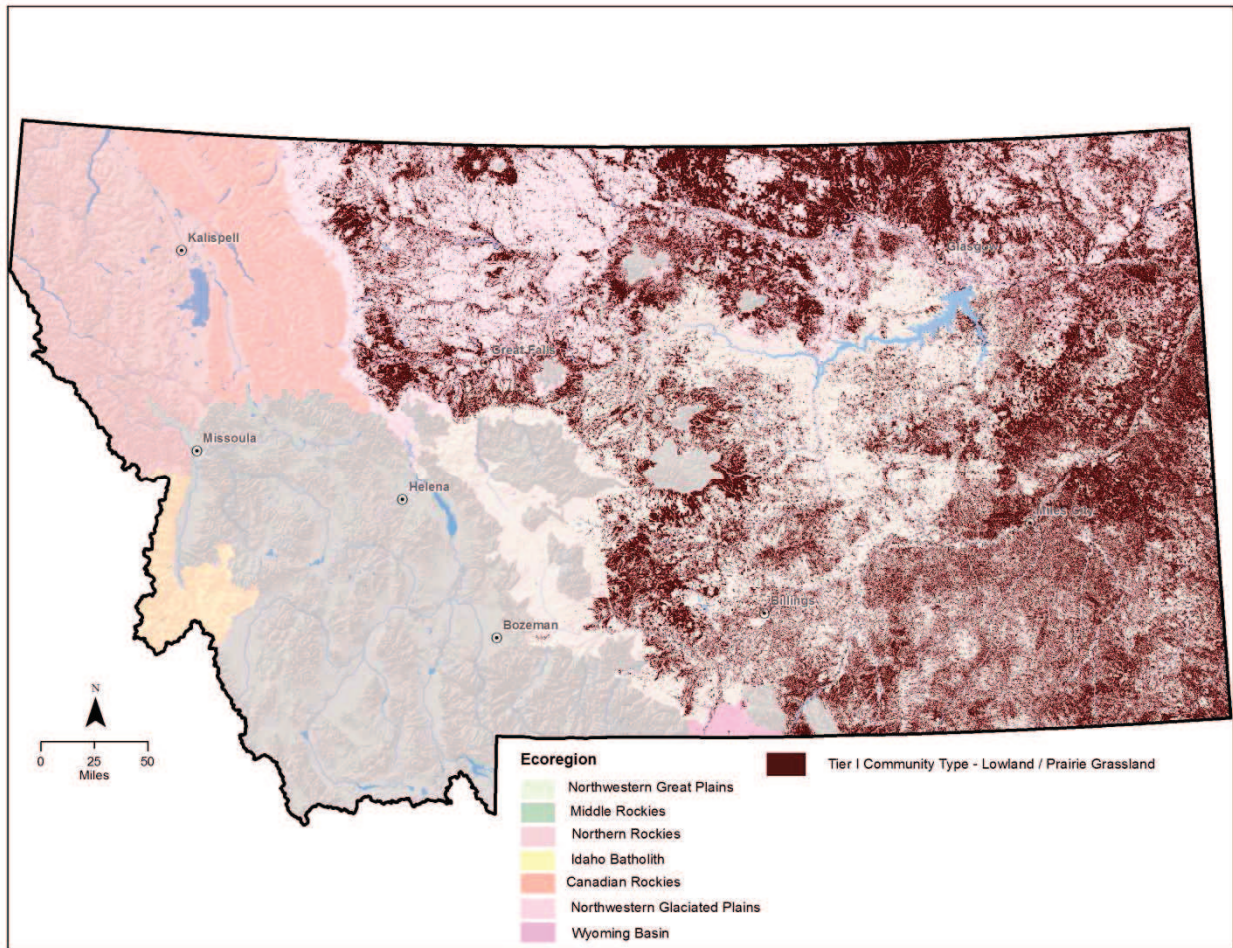


Figure 16. Distribution of Tier I Lowland/Prairie Grassland

The system covers much of the eastern two-thirds of Montana, occurring continuously for hundreds of square miles, interrupted only by wetland/riparian areas. Grasses typically comprise the greatest canopy cover. Forb diversity is typically high. Wind erosion, fire, and grazing constitute the other major dynamic processes that can influence this system. Drought can also impact it, in general favoring the shortgrass component at the expense of the mid-height grasses. With intensive grazing, cool season exotics increase in dominance; rhizomatous species have been shown to markedly decrease species diversity. Previously cultivated acres that have been re-vegetated with non-native plants have been transformed into associations such as Kentucky bluegrass (*Poa pratensis*) and western wheatgrass (*Pascopyrum smithii*) or into pure crested wheatgrass (*Agropyron cristatum*) stands.

Historically, frequent indigenous anthropogenic fires and large numbers of migrating bison and other herbivores contributed to plant species and plant community diversity within this system. In the Northern Great Plains, pre-settlement fire frequency occurred at intervals ranging from 3 to 20 years (Umbanhowar 1996). The elimination of bison and frequent fire intervals disrupted

plant community dynamics, leading to a decrease in plant community diversity. Typically, this community is tolerant of managed grazing practices, moderate-intensity fires, and fallowed wheat-cropping practices. Prolonged, extreme drought is a major threat to this system, reducing the density and cover of short grasses by as much as 80% and the bunchgrasses and native forbs to almost zero (Albertson 1937). During prolonged drought, native forbs are rapidly replaced by non-native invasive forbs. During the severe droughts of the 1930's and 1950's, basal area cover of grasses decreased from 80 to less than 10% under moderate grazing regimes in 3 to 5 years (Barbour 2000). In short, the dynamics of species changes in this system is a function of climate, but the magnitude of these changes is greatly influenced by the intensity of grazing and fire frequency. The distribution, species richness and productivity of plant species within this community are controlled primarily by environmental conditions, in particular the temporal and spatial distribution of soil moisture and topography. Another important aspect of this system is its susceptibility to wind erosion. Blowouts and sand draws can impact vegetation composition and succession within this system; fire and grazing constitute the other major disturbances. Overgrazing, fire, and trampling that leads to the removal of vegetation in areas susceptible to blowouts can either instigate a blowout or perpetuate blowouts occurring within the system.

Areas that have been disturbed by previous cultivation or overgrazing may support large numbers of invasive or non-native plant species. Control of these species can occur through managed grazing practices, chemicals, or biological mechanisms such as insects or fire. In the absence of fire, regions of the mixed grass prairie may be susceptible to woody plant or cacti invasion. Controlled burning practices every 4 years can control plant expansion. Landowners looking to manage for wildlife may choose to burn less often than livestock managers, promoting availability of woody vegetation for wildlife species. Grazing should be managed to avoid instigation and perpetuation of blowouts and vegetation loss within this system. Prescribed fires can also be used to enhance, maintain, and restore this system.

Associated Terrestrial SGCN

Amphibians

Great Plains Toad
Plains Spadefoot

Birds

Baird's Sparrow
Bobolink
Burrowing Owl
Chestnut-collared Longspur
Ferruginous Hawk
Golden Eagle
Loggerhead Shrike
Long-billed Curlew
McCown's Longspur
Mountain Plover
Sharp-tailed Grouse
Sprague's Pipit

Mammals

Black-tailed Prairie Dog
Dwarf Shrew
Fringed Myotis
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Spotted Bat
Swift Fox
Townsend's Big-eared Bat

Reptiles

Greater Short-horned Lizard
Milksnake
Western Hog-nosed Snake

Lowland/Prairie Grassland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	<p>Provide comments to BLM on Range Management Plans (RMP), grazing allotments plans, and other habitat related management plans</p> <p>Utilize funding opportunities to work with landowners to develop grazing systems that will reduce impacts to this community type and associated SGCN</p>
<p>Land use change:</p> <p>Conversion of native habitat to cropland agriculture</p> <p>Loss of acres enrolled in the Conservation Reserve Program (CRP)</p> <p>Removal of keystone species through poisoning</p>	<p>Land use change:</p> <p>Conversion of native habitat to cropland agriculture</p> <p>Fire regime</p> <p>Loss of CRP</p> <p>Potential removal of keystone species through a plague event</p>	<p>Conduct controlled burns to manage native grassland habitat and SGCN</p> <p>Promote CRP or CRP-like programs and limit native grassland conversion to cropland agriculture</p> <p>Reestablish native vegetation where opportunities exist</p>
	Weeds	<p>Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species</p> <p>Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs</p> <p>Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes</p> <p>Support research efforts on selective control for cheatgrass</p>

Current Impacts	Future Threats	Conservation Actions
		<p>When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season</p> <p>Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management</p>
	Climate change	<p>Continue to evaluate current climate science models and recommended actions</p> <p>Monitor habitat changes and address climate impacts through adaptive management as necessary</p>

Additional Citations

Albertson, F. W. 1937. Ecology of Mixed Prairie in West Central Kansas. *Ecological Monographs*. 7 (4): 481-547.

Barbour, M. G. 2000. North American terrestrial vegetation. Cambridge: Cambridge University Press.

Umbanhowar, C. E. 1996. Recent Fire History of the Northern Great Plains. *American Midland Naturalist*. 135 (1): 115-121.

Montane Grassland

Ecoregions: Canadian Rockies
 Idaho Batholith
 Middle Rockies

Northern Rockies
 Northwestern Glaciated Plains
 Northwestern Great Plains

6,938,195 acres
7.4% landcover

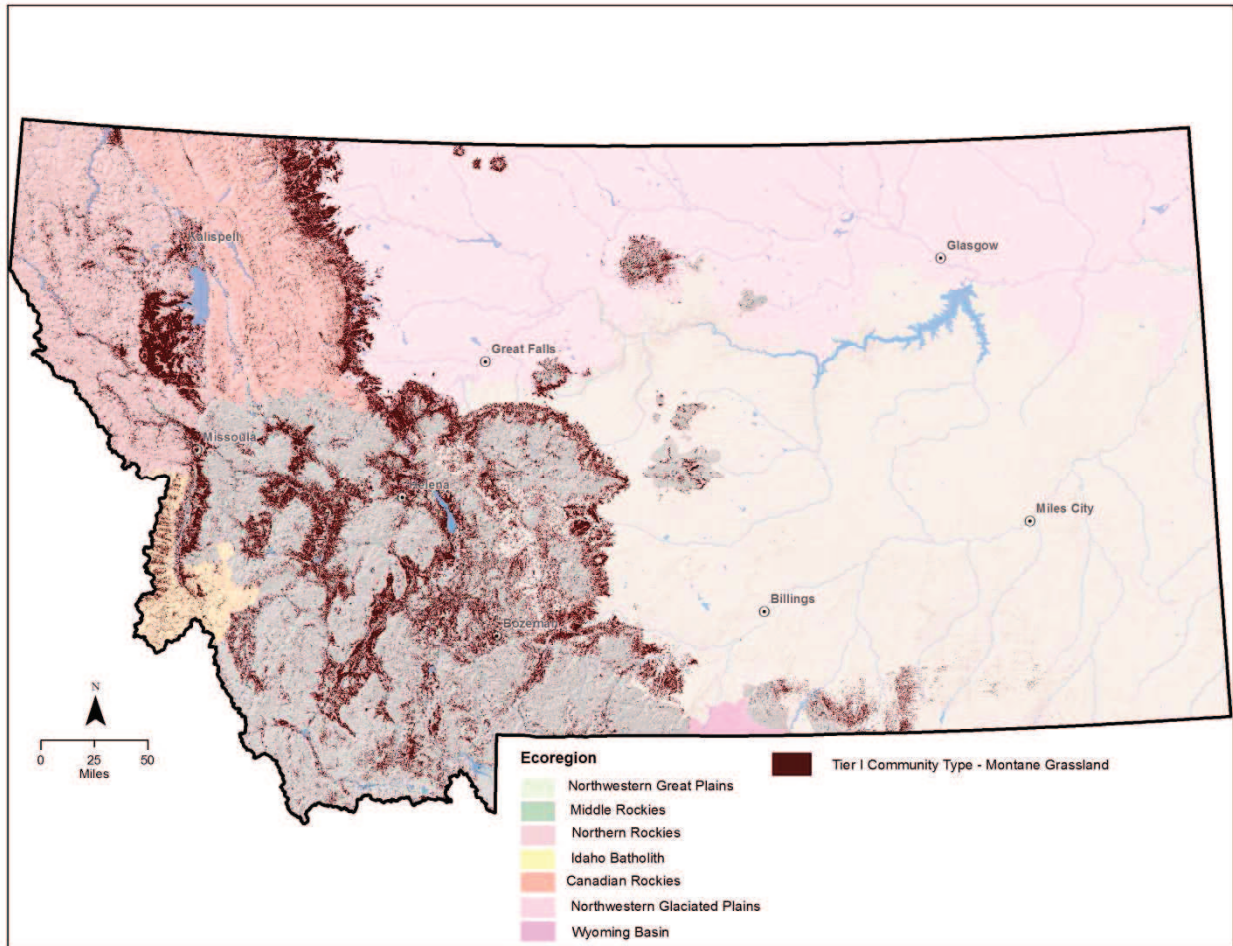


Figure 17. Distribution of Tier I Montane Grassland

This community type is found at elevations ranging from 1,800-8,800 feet in Montana. Below 5,400 feet, the grassland is generally dominated by rough fescue (*Festuca campestris*), Idaho fescue (*Festuca idahoensis*), or bluebunch wheatgrass (*Pseudoroegneria spicata*). Above this, the grasslands are dominated by a variety of grasses or forbs.

This system is susceptible to shrub encroachment and invasive weeds, especially if there is overgrazing and/or fire suppression. Prescribed burns and proper grazing management can help maintain this system.

Associated Terrestrial SGCN

Amphibians

Plains Spadefoot
Western Toad

Birds

Baird's Sparrow
Bobolink
Clark's Nutcracker
Ferruginous Hawk
Golden Eagle
Great Gray Owl
Green-tailed Towhee
Loggerhead Shrike
Long-billed Curlew
Northern Hawk Owl
Peregrine Falcon

Mammals

Bison
Dwarf Shrew
Fringed Myotis
Grizzly Bear
Hoary Bat
Merriam's Shrew
Preble's Shrew
Pygmy Shrew
Townsend's Big-eared Bat
Wolverine

Reptiles

Greater Short-horned Lizard
Milksnake
Northern Alligator Lizard
Western Skink

Montane Grassland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	<p>Manage for a range of grazing intensity across a landscape, to provide for a range of SGCN needs (e.g., intensive grazing for mountain plovers and less grazing for sharp-tailed grouse)</p> <p>Provide escape ramps in stock tanks to prevent drowning of small mammals and birds</p> <p>Where appropriate, develop watering sites on un-used and/or lightly grazed areas adjacent to montane grasslands</p> <p>Work with landowners and land management agencies to implement rotational grazing, based on appropriate stocking rates, that incorporates seasonal deferment and yearlong rest grazing treatments of sufficient frequency to support native perennial plant survival, vigor, and reproduction and will minimize impacts to SGCN</p>
<p>Land use change:</p> <p>Conversion of native habitat to cropland agriculture</p> <p>Fire regime</p>	<p>Land use change:</p> <p>Conversion of native habitat to cropland agriculture</p> <p>Fire regime</p>	<p>Determine the need for reseeding and/or resource management after wildland fires; monitor site for noxious weeds</p> <p>Encourage restoration of natural fire regime</p> <p>Encroaching conifers can be selectively removed in places where excessive encroachment threatens this community type</p> <p>Establish or encourage montane grassland habitat improvement projects to benefit SGCN</p> <p>Reestablish native vegetation where opportunities exist</p> <p>Where feasible, conduct controlled burns to manage native montane grassland habitat and SGCN</p>

Current Impacts	Future Threats	Conservation Actions
		Work with landowners and DNRC to minimize additional conversions to cultivation agriculture
Forest management: Conflicting management policies ORV trespass on closed roads	Forest management: Conflicting management policies Increased ORV use and subsequent illegal use	Decommission and reclaim old/unused roads Encourage restoration of natural fire regime or implement other management actions that mimic the ecological processes provided by fire Manage for a mosaic pattern and variation in grass sward and shrub height to benefit a variety of SGCN Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Manage road density at or below current levels Work with landowners and land management agencies to limit forest management activities (e.g., burning, logging) that may be detrimental to this community type and associated SGCN
Development/subdivisions Powerline corridor Roads	Development/subdivisions Powerline permit Utility corridors	Continue to work with local utility companies to mark power lines to reduce lethal collisions Whenever possible, install powerlines underground Work with utility companies and land management agencies to find the best path for new powerlines. Use of existing powerline corridors is ideal or along already disturbed habitat patches such as roads or railroads

Current Impacts	Future Threats	Conservation Actions
Fragmentation: Highway corridors	Fragmentation: Fences inhibiting wildlife movement Highway corridors Increasing train and vehicle traffic Increasing road density on public lands Road upgrading	Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use Manage road density at or below current levels Promote wildlife-friendly fencing when needed, and remove fences that are obsolete Remove fences to prevent collisions/entanglement by both avian and mammalian species Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills
Mine contamination from past mining activities	Mine contamination from past mining activities New hard rock mines	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health
Recreation	Increased recreation Motorized use on logging roads	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species

Current Impacts	Future Threats	Conservation Actions
		<p>Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs</p> <p>Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes</p> <p>Support research efforts on selective control for cheatgrass</p> <p>When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season</p> <p>Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management</p>
	Climate change	<p>Continue to evaluate current climate science models and recommended actions</p> <p>Monitor habitat changes and address climate impacts through adaptive management as necessary</p>

Sagebrush Steppe & Sagebrush-Dominated Shrubland

15,864,748 acres

Ecoregions: Middle Rockies

Northwestern Great Plains

16.9% landcover

Northwestern Glaciated Plains

Wyoming Basin

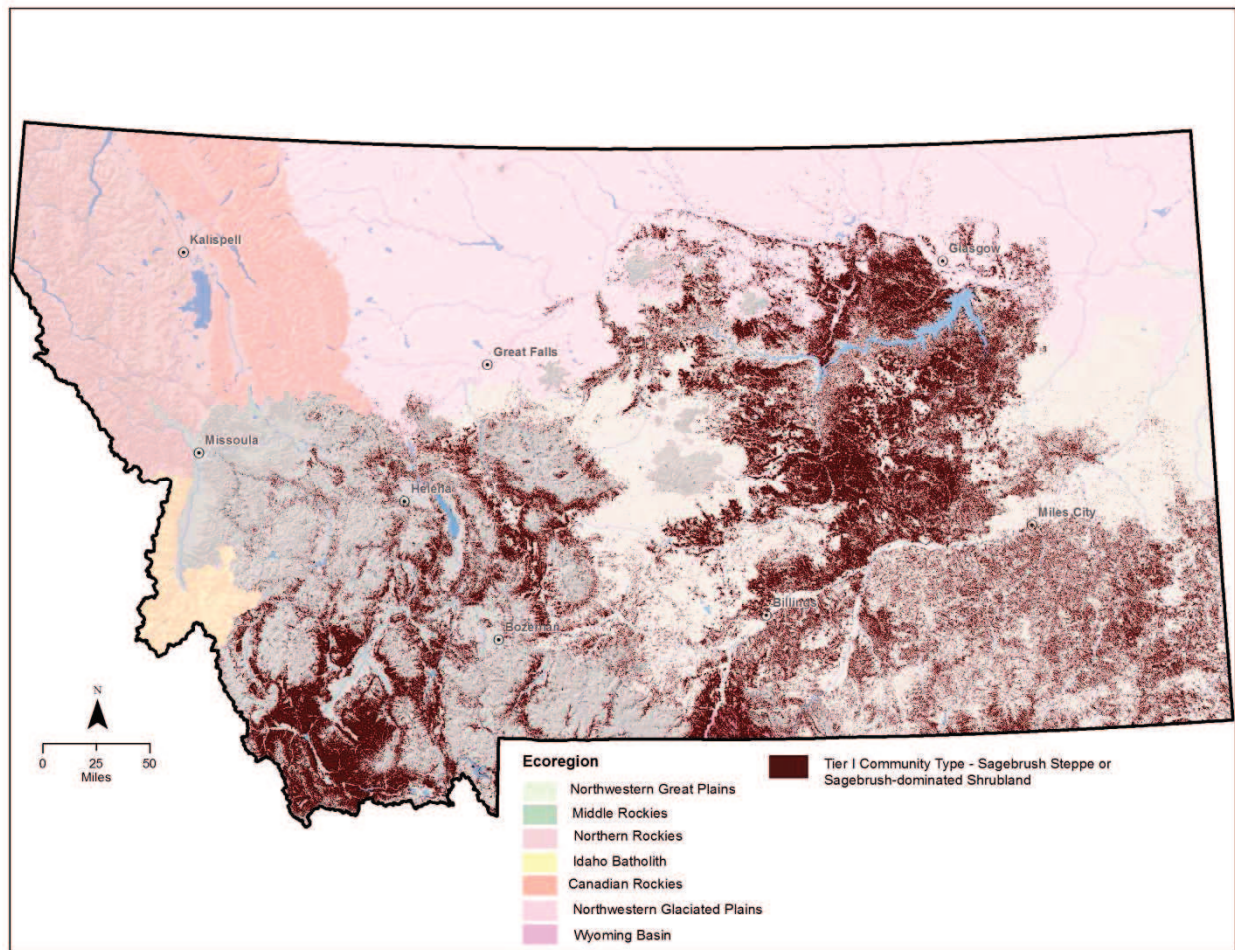


Figure 18. Distribution of Tier I Sagebrush Steppe & Sagebrush-dominated Shrubland

This community type is dominated by Wyoming big sagebrush (*Artemisia tridentata ssp. wyomingensis*), mountain big sagebrush (*A. t. ssp. vaseyana*), or black sage (*A. nova*). Shrub cover varies from 10-50%, and the cover of perennial grasses and forbs is generally over 25%.

The elevation where this type is found is between 2,200-10,500 feet. In some areas, this steppe community is in a disclimax condition because of historic and current overgrazing.

Proper grazing can be used to maintain the steppe character. As a general rule, fire is not a tool for maintaining sagebrush species because they are easily killed at all fire intensities and they only reproduce by seed. Cheatgrass invasion tends to be more likely in areas where perennial grasses and forbs are stressed or reduced; this can be tied to overgrazing. Fire also can be a catalyst for expanded cheatgrass invasion.

Associated Terrestrial SGCN

Amphibians

Great Plains Toad
Plains Spadefoot
Western Toad

Birds

Brewer's Sparrow
Burrowing Owl
Ferruginous Hawk
Golden Eagle
Greater Sage-Grouse
Green-tailed Towhee
Loggerhead Shrike
Mountain Plover
Sage Sparrow
Sage Thrasher
Sharp-tailed Grouse

Mammals

Bison
Black-tailed Prairie Dog
Dwarf Shrew
Fringed Myotis
Great Basin Pocket Mouse
Hoary Bat
Merriam's Shrew
Pallid Bat
Preble's Shrew
Pygmy Rabbit
Spotted Bat
Townsend's Big-eared Bat
White-tailed Prairie Dog

Reptiles

Greater Short-horned Lizard
Milksnake
Western Hog-nosed Snake

Sagebrush Steppe & Sagebrush-Dominated Shrubland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Poor grazing practices	Poor grazing practices	<p>Provide escape ramps in stock tanks to prevent drowning of small mammals and birds</p> <p>Work with landowners and land management agencies to develop a sustainable grazing rotation that will provide healthy grasses and forbs between sagebrush plants</p>
<p>Land use change:</p> <p>Conversion of native habitat to cropland agriculture</p> <p>Fire regime</p> <p>Removal of keystone species through poisoning</p>	<p>Land use change:</p> <p>Conversion of native habitat to cropland agriculture</p> <p>Fire regime</p> <p>Potential elimination of keystone species through plague</p> <p>Reduction of sagebrush grassland from conifer encroachment</p>	<p>Determine the need for reseeding and/or resource management after wildland fires; monitor site for noxious weeds and control as needed</p> <p>Encourage converting expired CRP into grazing lands and allow these habitats to return to a sagebrush steppe character</p> <p>Encroaching conifers can be selectively removed in places where excessive encroachment threatens this community type; mechanical treatment should be the primary approach, but where the canopy becomes overly dense, fire may be an appropriate tool</p> <p>Establish or encourage habitat improvement projects to benefit SGCN</p> <p>Follow habitat manipulation guidelines set out in the <i>Management Plan and Conservation Strategies for Sage Grouse in Montana – Final</i> (Montana Sage Grouse Work Group 2005)</p> <p>Maintain ground squirrel and prairie dog colonies, and maintain small mammal populations as prey for many bird and mammal species</p> <p>Reestablish native vegetation where opportunities exist</p> <p>Reestablish the balance between shrub cover and perennial grass and forb cover (for more details follow Paige and Ritter 1999)</p>

Current Impacts	Future Threats	Conservation Actions
		<p>Reseed cheatgrass dominated land with native grasses, forbs, and shrubs</p> <p>Reseed former winter range with appropriate sagebrush, native grasses, and native forbs</p> <p>Restoration should focus on restoring or rehabilitating degraded and/or disturbed sites back to a healthy native plant community</p> <p>Work with landowners to develop a plan for minimal control of prairie dogs and/or use non-toxic methods of control</p>
<p>Land management:</p> <p>Conflicting management policies</p> <p>Illegal ORV trespass</p> <p>Roads</p>	<p>Land management:</p> <p>Conflicting management policies</p> <p>Increased ORV use and subsequent illegal use</p> <p>Roads</p>	<p>Decommission and reclaim old/unused roads</p> <p>Follow habitat manipulation guidelines set out in the <i>Management Plan and Conservation Strategies for Sage Grouse in Montana – Final</i> (Montana Sage Grouse Work Group 2005)</p> <p>Increase education and outreach to ORV community</p> <p>Increase enforcement of ORV trespass on public lands</p> <p>Manage road density at or below current levels</p> <p>Work with private landowners, non-governmental organizations, and land management agencies to help ensure work plans or practices have minimal effect on native sagebrush steppe habitats and associated SGCN</p>

Current Impacts	Future Threats	Conservation Actions
Development/subdivisions Powerline corridor Roads	Development/subdivisions Powerline permit Utility corridors	Continue to work with local utility companies to mark power lines to reduce lethal collisions Investigate and promote landowner incentives to keep large blocks of land intact Whenever possible, install powerlines underground Work with utility companies and land management agencies to find the best path for new powerlines. Use of existing powerline corridors is ideal or along already disturbed habitat patches such as roads or railroads
Mine contamination from past mining activities	Mine contamination from past mining activities New hard rock mines	Offer technical assistance to other agencies engaged in remediation of abandoned mines, to ensure cleanup protects fish and wildlife health
Motorized use Recreation	Motorized use Increased recreational use	Increase education and outreach to ORV community Increase enforcement of ORV trespass on public lands Maintain public access roadways into public land to help keep the public on those roads and prevent damage from illegal ORV use
Weeds	Weeds	Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes

Current Impacts	Future Threats	Conservation Actions
		<p>Support research efforts on selective control for cheatgrass</p> <p>When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season</p> <p>Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management</p>
Climate change	Climate change	<p>Continue to evaluate current climate science models and recommended actions</p> <p>Monitor habitat changes and address climate impacts through adaptive management as necessary</p>
	<p>Fragmentation:</p> <p>Fences inhibiting wildlife movement</p> <p>Increasing train and vehicle traffic</p>	<p>Explore the possibility of providing wildlife overpasses and underpasses along major transportation corridors and implement where feasible</p> <p>Promote wildlife-friendly fencing when needed, and remove fences that are obsolete</p> <p>Remove fences to prevent collisions/entanglement by both avian and mammalian species</p> <p>Work with landowners and land management agencies to limit activities that may further fragment the landscape and negatively impact SGCN</p> <p>Work with railroad companies to reduce impacts in important connectivity areas and to minimize grain spills</p>

Additional Citations

Montana Sage Grouse Work Group. 2005. Management plan and conservation strategies for greater sage-grouse in Montana- Final Montana Sage Grouse Work Group. 200 pp.

Paige, C., and S. A. Ritter. 1999. Birds in a sagebrush sea: managing sagebrush habitats for bird communities. Partners in Flight Western Working Group, Boise, Idaho.

Scrub and Dwarf Shrubland

Ecoregion: Wyoming Basin

16,587 acres
0.02% landcover

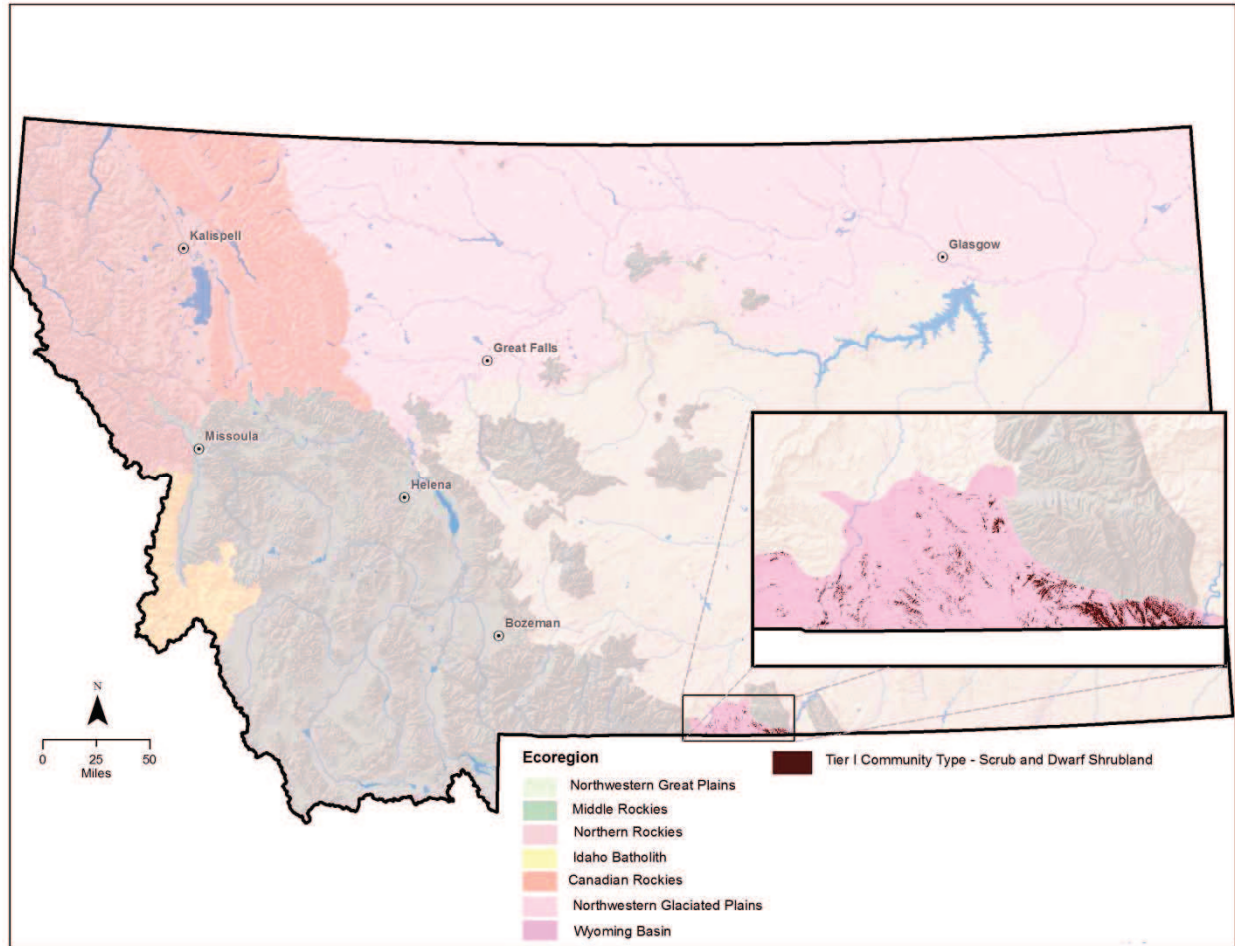


Figure 19. Distribution of Tier I Scrub and Dwarf Shrubland

This community type occurs on gentle slopes, rolling plains, to the steep-facing badlands in south-central and south-eastern portions of the state. It is a shrub dominated community and forb cover is generally very low. This community type faces extreme climatic conditions, with warm to hot summers and freezing winters. The annual precipitation is generally 12 inches or less, and it normally occurs as spring rains and sometimes during late summer or fall.

Fire has been rare in this system due to the low plant cover. Excessive grazing, particularly by sheep, can significantly impact the cover of the principal shrub species, leading to an increase of cheatgrass and exotic annual forbs which results in the decline of the native perennial grasses in this system. Areas infested with cheatgrass cause the dynamics of this community type to change and increases the fire potential.

Associated Terrestrial SGCN

Amphibians

Plains Spadefoot

Birds

Brewer's Sparrow

Burrowing Owl

Chestnut-collared Longspur

Ferruginous Hawk

Golden Eagle

Greater Sage-Grouse

Loggerhead Shrike

Mountain Plover

Sage Sparrow

Sharp-tailed Grouse

Mammals

Black-tailed Prairie Dog

Fringed Myotis

Hoary Bat

Merriam's Shrew

Pallid Bat

Preble's Shrew

Spotted Bat

Townsend's Big-eared Bat

White-tailed Prairie Dog

Reptiles

Greater Short-horned Lizard

Milksnake

Western Hog-nosed Snake

Scrub and Dwarf Shrubland Current Impacts, Future Threats, and Conservation Actions

Current Impacts	Future Threats	Conservation Actions
Weeds	Weeds	<p>Implement invasive plant species control – mechanical, biological, and chemical tools (site specific) should be selected to control invasive plant species</p> <p>Invasive plant species control, reseed cheatgrass dominated land with native grasses and forbs</p> <p>Remove and/or restrict the spread and distribution of invasive plants that harm desired native habitat attributes</p> <p>Support research efforts on selective control for cheatgrass</p> <p>When possible, conduct weed spraying in the late summer and early fall, as this tends to have less impacts on native forbs than spraying earlier in the growing season</p> <p>Work collaboratively with landowners, land management agencies, and county weed supervisors to develop landscape level approaches to weed management</p>